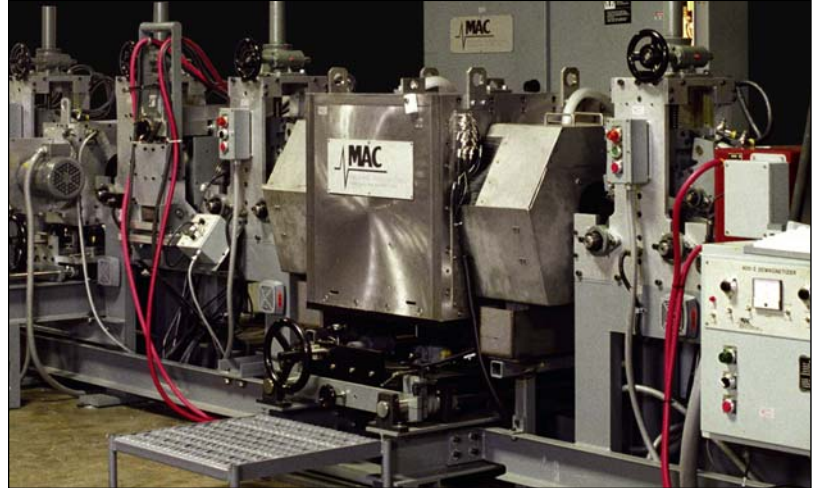


***MAC Ultrasonic Rotaries are designed to inspect tube and bar for flaws or dimensional variations at high throughput speeds.***



*Echomac Rotary Ultrasonic Series UT 510 10 Channel System*

## OVERVIEW

Magnetic Analysis Corp. Echomac® Rotary UT systems provide ultrasonic inspection at high throughput speeds for round bar and tubular products. The exact throughput speed that can be achieved is a function of the flaw specifications as well as the size of the product. Typical Rotary Ultrasonic systems consist of:

### **Rotary Mechanism with Transducer Head.**

The Rotary Mechanism can be configured to detect surface and subsurface defects using shear waves and internal defects and dimensional measurements, including wall thickness and ID OD diameter, using compression waves.

The Rotary Mechanism spins the transducers and couplant at relatively high speeds about the test bar or tube while it is fed through. Various models of the Rotary Mechanism are available.

### **Echomac Instrumentation**

The Echomac® Rotary tester is designed to operate with MAC's FD series Echomac ultrasonic instrumentation. Multiple test channels can be accommodated to provide flaw and/or thickness gauging and ID/OD diameter. A separate Data Sheet can be requested.

### **V-Roll Pinch Stand Drive and Centering Mechanism**

Standard systems utilize 120 degree bottom V-rolls with spring loaded or air operated top pinch rolls. Either hardened steel, or urethane rolls are available.

### **Constant Center Drive Bench**

A constant center system with triple roll drives is also available.

### **Water System**

Piping and controls for pressurized water to the rotary and a drain are included. The control valves may be used to synchronize the water supply with the feed intervals of

the product being tested. For many installations, an optional recirculating water chiller system is recommended to provide a constant source of filtered, temperature controlled water.

### **Electrical Control Package**

Electrical controls include main disconnect; starters for rotary and drive mechanism motors; and controls for the water source which include safety interlock shutdown for when there is water interruption, elevated bearing temperature, or the rotary is opened for setup.

## APPLICATIONS

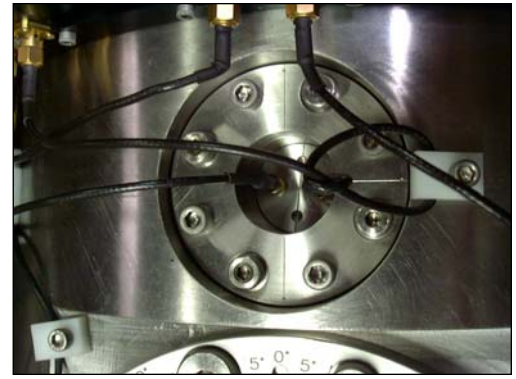
Echomac systems conform with API test requirements for OCTG (Oil Country Goods Product). They also comply with typical standard UT testing procedures for products such as heat exchanger tube, hydraulic boiler tubing, umbilical tube, and special quality bars.

Since the material does not need to be rotated, 100% defect coverage can be obtained at relatively high throughput rates, an advantage over segmented, stationary transducer systems, in spin-the-tube type installations. In addition, expensive preparation such as degreasing prior to the UT test is eliminated, and straightness requirements may not be as stringent. Echomac Rotary Systems may also be combined with eddy current, flux leakage, and gaging, all operating simultaneously.

Change-over times can be kept to a minimum with Echomac's convenient mechanical design and ability to store and recall an unlimited number of instrument setups. Quick access knobs for bushing and diaphragm changes, and Echomac's system of offsetting, rather than angulating transducers are just a few of the features that enhance customer convenience.

MAC's larger capacity UT Rotaries are also designed to operate without any internal seals. They essentially feed more water in than can be leaked out. These "seal-less" rotaries are much less likely to be damaged by grit and other mill contaminants and provide greater reliability.

Longitudinal mode transducer holder, shown at right.



Shear wave mode transducer holder, with simple offset mechanism shown at right.



### ROTARY MECHANISM SPECIFICATIONS

English Series	Size Range		Maximum RPM	Maximum Number of Active Transducers
100 Series	1/4" - 1"	(6.35 - 25.4mm)	3600/4500	Two
150 Series	1/4" - 1 1/2"	(6.35 - 38.1mm)	4000	Three
600 Series	1" - 6"	(25.4 - 152.4mm)	1800	Seven
<b>Metric Series</b>				
50 mm	10 - 50 mm	(.375" - 2")	3600	Seven/Sixteen
75 mm	15 - 75 mm	(.625" - 3")	2400	Seven/Sixteen
100 mm	20 - 100 mm	(.875" - 4")	2400	Seven/Sixteen
125 mm	25 - 125 mm	(1" - 5")	1800	Seven/Fourteen
180 mm	35 - 180 mm	(1.4 - 7")	1200	Sixteen
220 mm	38 - 220 mm	(1.5" - 8.66")	850	Fourteen

*The above specifications are suggested ranges, maximum RPM and transducer numbers, but additional options are available for specific applications upon request.*

#### UT Drive Benches

*Includes eight bottom V-rolls with top pinch rolls, plumbing for water supply and drain, and provision for horizontal and vertical alignment of Rotary Mechanism, and 3 HP AC frequency controlled drive motor. For barstock, heavy wall tube, and difficult materials, selecting a drive bench one size up in capacity may be required.*

Type Range	Size Roll Assembly	Type of Top Pinch
DB UT 1600	3/16" - 1 1/2" (4.76 - 38.1mm)	air or spring loaded
DB UT 3500	1/4" - 3 1/2" (6.35 - 88.9 mm)	air or spring loaded
DB UT 6000	3/4" - 5 1/2" (19.05 - 139.7 mm)	air loaded

#### Utility Requirements

Electrical	240/480V, 60 Hz, 3 phase alternating current, 20 amps; and 120V, 60 Hz, single phase, 20 amps (International voltages and frequencies are available if specified at time of order)
Water	45 psi, quantity of gpm is dependent on the series selected.
Air	80 psi
Drain	3" capacity gravity feed for 15 gpm minimum, depending on series selected.



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Rotary 8.10